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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/937,780	09/28/2001	Shahram Mihan	0050/49854	7113

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WASHINGTON, DC 20036

EXAMINER

LEE, RIP A

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 06/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/937,780

Applicant(s)

MIHAN ET AL.

Examiner

Rip A. Lee

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on March 24, 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11 and 12 is/are allowed.
- 6) ☒ Claim(s) 1-10 and 14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

### DETAILED ACTION

This office action follows a response filed on March 24, 2003. Applicants have amended claims 1-3, 11, and 12. Claim 11 now appears as an independent claim. New claim 14 was added.

#### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-231317 to Tani *et al.* in view of U.S. Patent No. 5,576,263 to Badley *et al.* for the same reasons set forth in the previous office action (Paper No. 6).

4. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koehn *et al.* (*Abstr. ACS*, 1997) in view of U.S. Patent No. 5,576,263 to Badley *et al.* for the same reasons set forth in the previous office action.

***Response to Arguments***

5. The Applicants traverse the rejection of claims 1-5, 7, 9, and 10 under 35 U.S.C. 103(a) as being unpatentable Tani *et al.* in view of Badley *et al.* Applicant's arguments have been considered fully, but they are not persuasive.

The premise of the Applicant's argument lies in the fact that copolymerization with triazacyclohexane-chromium complexes is less straightforward than suggested, as indicated by the density data of Table 5. The Applicants thus conclude that the prior art would not lead one to conclude that the present catalyst system would have been suitable for copolymerization reactions.

The skilled artisan would not make said conclusion only because the Tani *et al.* reference teaches polymerization of 1-hexene. On the other hand, the ordinary artisan, conversant in the art of olefin polymerization, having read said reference, would find it obvious to use the catalyst to polymerize and copolymerize olefins because the art, *ipso facto*, is concerned with such processes. Hence, the notion of copolymerization of olefins is not novel. Even if the artisan had minimal skill with chromium based systems, he could turn to the prior art of Badley *et al.*, which discusses copolymerization using chromium catalysts. Therefore, it is deemed that the subject matter of the present claims is obvious over the prior art.

The Applicants also indicate that there is always great uncertainty whether ligands will stay attached when the complex is mixed with a support, citing an excerpt from *J. Polym. Sci.* which explains that chromocene catalysts lose one of their rings when mixed with silica.

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The journal article was not received, and the year of publication was not furnished for reference purposes. Nonetheless, the examiner concurs with the element of uncertainty in catalyst chemistry. Indeed, the loss of  $\pi$ -ligands in chromocene-based catalyst systems is well established. However, the bonding in the triazacyclohexane-chromium complexes of Tani *et al.* is markedly different, and the skilled artisan would appreciate the art of Tani *et al.* resolves difficulties associated with the aforementioned lability of  $\pi$ -ligands. Moreover, the skilled artisan would expect the use of  $\sigma$ -bonding, as well as kinetically inert cryptand framework to stabilize the cationic metal center upon activation. Therefore, the skilled artisan would expect that the compounds of Tani *et al.* are very likely to effect olefin polymerization successfully, even in the presence of a support. This expectation of success provides the requisite motivation for combining references. In conclusion, then, the skilled artisan would find it obvious to arrive at the subject matter of the present claims.

6. The Applicants traverse the rejection of claims 1-6 under 35 U.S.C. 103(a) as being unpatentable Koehn *et al.* in view of Badley *et al.* The basis for Applicant's traversal is the same as that applied to the previous rejection. Therefore discussion of the merits of the traversal apply here.

7. In view of the discussion of paragraph 5, the rejections record have not been withdrawn.

*Allowable Subject Matter*

8. The following is a statement of reasons for the indication of allowable subject matter: Claims 11 and 12 are allowed over the cited prior art because none teaches use of a triazacyclohexane ligand in which at least one of  $R^1$ ,  $R^2$ , and  $R^3$  is different from the other radicals of this group. Also, none of the cited references teaches metal complexes containing bridged triazacyclohexane ligands.

*Conclusion*

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (703)306-0094. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (703)308-2450. The fax phone number for the organization where this application or proceeding is assigned is (703)746-7064. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

ral

June 2, 2003



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